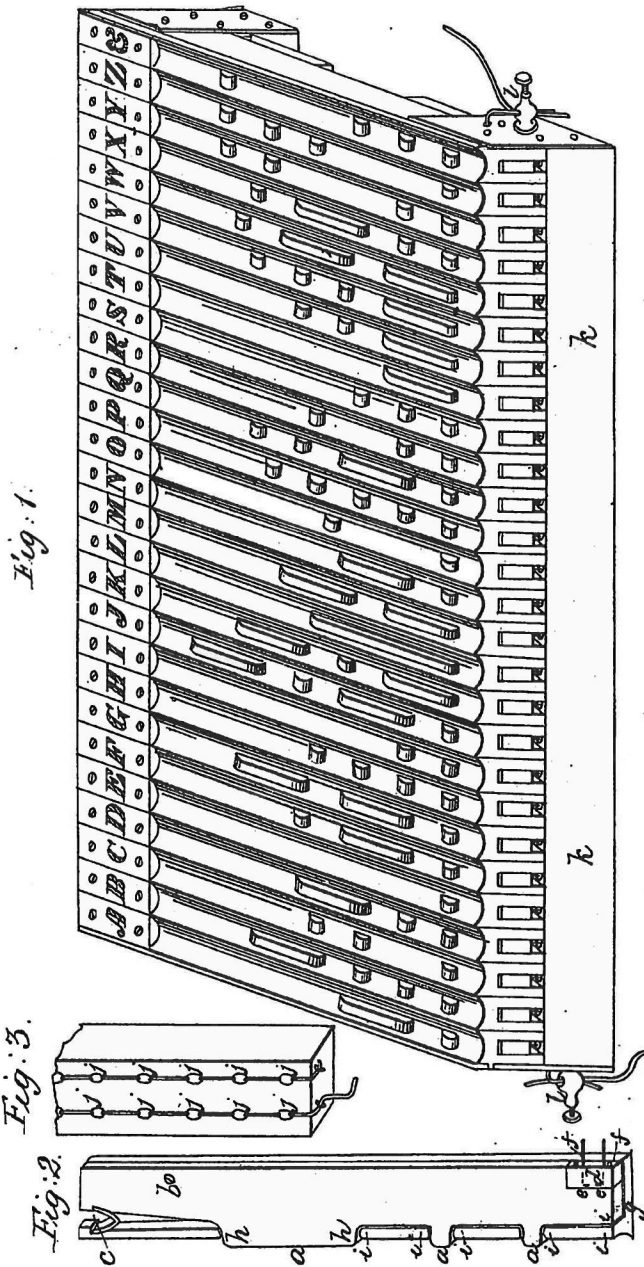


J. J. HAYDEN.  
Electric Circuit Closer.

No. 19,027.

Patented Jan. 5, 1858.



# UNITED STATES PATENT OFFICE.

JOHN J. HAYDEN, OF RISING SUN, INDIANA.

## IMPROVED METHOD OF OPERATING TELEGRAM-KEYS.

Specification forming part of Letters Patent No. 19,027, dated January 5, 1858.

*To all whom it may concern:*

Be it known that I, JOHN J. HAYDEN, of the city of Rising Sun, county of Ohio, and State of Indiana, have invented a new and useful Key to the Magnetic Telegraph; and I do hereby declare that the following is a full, clear, and exact description of the construction and the operation of the same, reference being had to the accompanying drawings, viz:

The first is a perspective drawing of the key complete, the second being a side view of the letter D, showing the manner in which the parts composing the whole are made and adjusted. Fig. 3 represents a part of the cells, which are connected by wires and intended to be filled with quicksilver, letters of reference being marked thereon, and which are hereby made to constitute a part of this application for Letters Patent.

The nature of my invention consists in placing as many levers side by side as you desire to make letters or figures, each lever having elevated upon its upper edge the number of dots and lines which, according to the Morse combination, constitute any given letter or figure, and placing the levers, when complete, underneath a finger-board whose surface is perforated with openings through which the raised dots and lines may protrude—say from one-eighth to three-sixteenths of an inch—the surface of said finger-board being fluted, so that the slots or openings may be in the center of the groove or flute. In the front part of the lever is placed a wire staple with the points downward, and the lever secured by means of a screw, as seen in Fig. 2, at the point marked with the letter *b*, and caused to spring back to its place upon being pressed down by passing the finger along the flutes over the dots and lines by means of a spring at the opposite end of the lever from where the staple is placed, as seen in Fig. 2 at the point marked by the letter *c*. Upon passing the finger over the flutes on the finger-board over the dots and lines the points of the staples are plunged into the cells of quicksilver, as shown in Fig. 3 at the points lettered *jj, jj, jj, jj*, which are connected in parallel rows by means of wire passing through the cells from one end of the strip to the other, forming the two circuits, and connected by the staple joining the cells crosswise, thereby causing the current to be made and broken as rap-

idly as the finger is passed over the dots and lines, with absolute certainty, the quicksilver connection being as perfect as if the points of the staples were soldered fast to the overhead and ground wires as each connection is made, although the connection may be made in the same manner as it is done with the one-lever key now used in telegraph offices. A lever being now constructed for each letter of the alphabet, and as many figures, call-keys, &c., as may be desirable, they are arranged as seen in Fig. 1, which is a perspective drawing of my key complete.

To enable any one skilled in the art to make and use the key which I have invented, I will proceed to describe its mode of construction and the manner in which it is to be used.

The levers may be made of wood or metal, (but in this description I will simply describe a key constructed of wood,) and placing them side by side and securing them by clamps. I then proceed to lay off the surface formed by the levers thus arranged into half-inch spaces by drawing parallel lines. I then take each lever and proceed to cut away the part of the lever forming the spaces, so as to leave the dots and lines elevated about half an inch, and forming the dots and lines with mathematical precision by means of the half-inch spaces marked on the edge, as follows—viz., each "dot," as it is called, being made one-half inch in length, and each line two and one-half inches in length except the letter *L*, which is five inches in length, and a cipher, or 0, which is seven and one-half inches long, the spaces between the dots and lines being one inch, except in the formation of the letters *O, O, R, Y, Z*, and *&*, which require a three-inch space.

In the front part of each key is inserted a wire staple, as seen in Fig. 2, as lettered *e e*.

The levers being all prepared, I proceed to arrange them in receiving-strips, as seen in Fig. 2, by cutting away the wood in the raised edge, so as to admit the dots and lines which are upon the lever into the spaces cut away, and secure the lever by means of a screw, as seen at the point designated by the letter *b* in Fig. 2, and also fitting a spring between the end of the lever and the lip of the receiving-strip, as seen in Fig. 2 at the point lettered *c*; and the levers being all thus adjusted in the receiving-strips, as seen in Fig. 2, having the

upper edge fluted, I next proceed to arrange the strips side by side, so that when secured by cross-strips and screws, as seen in Fig. 1, of suitable length, width, and thickness, the levers appear to be placed in grooves, and the dots and lines appearing in the grooves elevated about from one-eighth to three-sixteenths of an inch above the lower part of the groove, or as nearly the level of the edges of the grooves as may be. I next proceed to place the strip containing the quicksilver-cells, as shown in Fig. 3, underneath the front part of the levers, so that the legs of the staples may plunge into the cells of quicksilver upon the lever being pressed down by the finger passing over the dots and lines along the grooved finger-board, and being elevated again by the springs in the back end of the levers. The strip containing the quicksilver-cells may be one inch square and of sufficient length to reach across the width of all the levers when so arranged, and the rows of holes, say, half inch apart cross-wise, and made so as to be immediately under the levers as they fall upon being pressed down.

Upon the ends of the cross-board which fastens the key-strips together, or in some other suitable place, I put a common telegraph thumb-screw, and bring the wire which passes through the back row of quicksilver-cells through the thumb-screw, and the wire passing through the front row of quicksilver-cells through the other thumb-screw, simply to facilitate the connection with the ground-circuit and wire-circuit.

My key being now complete, I proceed to let-

ter the grooves with the letters of the English alphabet, of suitable size, opposite the cipher of the Morse alphabet, corresponding with the letter which it represents.

My key is now ready for use, which is done as follows: Connect the ground-wire with one of the wires passing through the quicksilver-cells by means of the thumb-screw, as seen in Fig. 1, and the upper wire with the other wire passing through the second row of cells of quicksilver, by means of the second thumb-screw, by simply drawing the finger along the flutes in the surface of the finger-board from the back part of the key to the front part with ordinary uniform speed across the dots and lines, thereby enabling any one, however unskilled in the art of telegraph writing or operating, to telegraph messages more accurately than ordinary telegraphing is done, in fact almost precluding the possibility of mistakes, the index to the cipher being the plain English letter, and the finger performing mathematically and mechanically what is now done mentally in the use of the ordinary one-lever key.

What I claim as my invention, and desire to secure by Letters Patent, is—

The particular formation of the levers into dots, lines, and spaces of any desired length, thereby securing perfect mathematical accuracy in the formation of the ciphers which compose the Morse-telegraph alphabet.

JOHN J. HAYDEN.

Witnesses:

H. A. DOWNEY,  
GEO. MCARVEY.